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EXAMINER	
CHOW, DOON Y	
ART UNIT	**PAPER NUMBER**
2675	24

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/823,448	PARKER, FREDERICK S.	
	Examiner	Art Unit	
	Dennis-Doon Chow	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 7/22/04.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-9,19,20 and 23-48 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-9,19,20 and 23-48 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

FINAL DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-2, 19-20, 23-24 and 34-35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. With regards to the claims the examiner could not find any support within the specification of 09/823,448 and co-pending application US 6,224,216 in which "the light having the first wavelength and the light having the second wavelength can be blended, in at least in part, by adjusting durations of the first emission time period and the second emission time period" and "the light having the first wavelength and/or the light having the second wavelength and the light having the third wavelength can be blended, at least in part, by adjusting the durations of the first emission time period, the second emission time period and the third emission time period." The new matter can be found on claim 1, page 4, lines 18-20; claim 2, page 5, lines 12-15; claim 19, page 7, line 17-page 8, line1-4; claim 20, page 8, line 13-16; claim 23, page 9, lines 10-12; claim 24, page 10, lines 5-8; claim 34, page 12, lines 11-13; and claim 35, page 13, lines 3-6.

Claims 3-9, 25-33 and 36-48 are rejected as being dependent on a rejected base claim.

Claim Rejections - 35 USC § 103

.2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 5-6, 19-20 and 44-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui et al. (hereinafter "Matsui"), US 6,281,949 B1 in view of Reymond, U.S Patent No. 5,936,599 and further in view of Corrigan, US 6,480,634 B1.

As pertaining to claims 1 and 19 Matsui discloses a picture display method and apparatus for displaying a picture by spatially modulating the light from a light source and projecting the modulated light (col. 1, lines 7-10). Matsui discloses circuit, means, images and data comprising two sets of LEDs or channels 12R and 12G, that generate light each having a different wavelength from each other (col. 7, lines 33-44, Fig. 2). Matsui further discloses a display controller 35 and picture signal processing circuit 31, in which it functions as described herein: the display controller drives the drive circuit for the respective colors 34R and 34G for driving the LEDs individually and the controller controls the picture signal processing circuit. A picture signal VS is entered to the circuit 31 when generates a picture signal for corresponding the each color that is stored in memory 32R and 32G, corresponding to each color. The light valve driving circuits 33R and 33G read out the respective color picture signals at a pre-set period from the picture memories 32R and 32G to drive the picture display light valves 11R and 11G, based on the read-out picture signals, respectively. The light-emitting diode driving circuits 34R and 34G drive the light-emitting diodes 12R and 12G for perpetually or suitably lighting the light-emitting diodes 12R and 12G,respectively (col. 10, lines (col. 9, lines 56-67; col. 10, lines 1-45; Fig. 2-3). Furthermore, Matsui discloses relay lenses 13R and 13G, field lenses 14R and 14G, first and second picture display light valves 11R and 11G and prism 10 for collecting all of the color picture signals (col. 2, lines 9-44; fig. 2). In addition, Matsui discloses something similar to blending of the first and second light wavelengths based on the durations

of the first and second light emission time periods. Referring to the timing chart of FIGS. 17A-17D, the operation of the picture display device of the present embodiment is explained. The controller 35, fed with the picture signals VS, generates timing signals for splitting a frame period or a field period into three equal portions in timed relation to the picture signals and sends the generated timing signals to the picture signal processing circuit 66 and to the light valve driving circuit 68. The picture signal processing circuit 66 is responsive to these timing signals to generate red picture signals, green picture signals and the blue picture signals, and sequentially switches between these signals to output the selected signals. These picture signals are temporarily stored in the picture memory 67. The light valve driving circuit 68 is responsive to the timing signals from the controller 35 to sequentially read out the picture signals of the respective colors from the picture memory 67 to drive the picture display light valve 65. The result is that, in the picture display light valve 65, gradation pictures of red (R), green (G) and blue (B) are sequentially switched and displayed during a frame or field period, as shown in FIG. 17D. The controller 35 controls the light-emitting diode driving circuits 34R, 34G and 34B, in a time relation to the display of the gradation pictures for red, green and blue colors in the picture display light valve 65, so that the light-emitting diodes 12R, 12G and 12B will be turned on sequentially. The result is that the light-emitting diodes 12R, 12G and 12B (indicated as LED R, LED G and LED B in FIGS. 17A-17C) are turned on in a timed relation with the display of the gradation pictures for red, green and blue in the picture display light valve 65, so that the light beams of the respective colors are sequentially switched and illuminated on the picture display light valve 65. By the above operation, the red, green and blue pictures are sequentially switched and projected on the screen 17. These pictures are perceived by the viewer as the color picture due to the afterimage effect of the human eye (col. 17, lines 4-42).

As pertaining to claims 1 and 19, Matsui does not disclose a power supply providing

a shared current source to the first and second set of LEDs, even though it would be obvious to that one is incorporated in order to power the LEDs, a first switch arranged in series with the first set of LEDs, a second switch arranged in series with the second set of LEDs and first and second light transmission guides to route light or a means for routing the light or propagating the light from the first and second sets of LEDs to a first and second display device.

As pertaining to claims 1 and 19, Reymond discloses a circuit that comprises in one embodiment an AC power source 34 and switch 36 that is connected in series with an LED array 31 and in a second embodiment, same thing as described in the first embodiment, but with capacitor C in parallel with the array LED array, in this combination further comprising an inductor with the help the capacitor C provides an high impedance current source (col. 4, lines 51-55; col. 6, lines 1-32 and Figs. 4-5). It is also known that the switch may be of several different types, whether it is switching circuit or any type of transistor, i.e. MOSFET, BJT etc.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine a switch for each of the LED arrays of Reymond with Matsui.

The suggestion/motivation for doing so would have been to provide a LED circuit that is able to operate with a common power source but with the help of a switch the controlling circuit would function at more efficient rate. When the switch is closed it would allow the circuit to function properly but when open it would allow the LEDs to rest in a sense or to allow the circuit not to consume power thus saving power. Also the switch would help if there was a problem with that particular LED array because it would stay open, hopefully, thus allowing the circuit to operate the other LED array without using or consuming power to operate the nonfunctioning LED array.

As pertaining to claims 1 and 19, Corrigan discloses an invention related to image

projectors, which a laser illuminated modulator produces an array of pixels and in which the array of pixels is projected on a display screen (col. 1, lines 7-11). Furthermore, Corrigan discloses a grating light valves (GLV), 78, 80 and 82. The GLVs are used for guiding the light, i.e. light transmission guides, for modulating the red, green and blue laser illuminations to produce red, green and blue linear arrays of pixels (col. 4, lines 1-5, fig. 5). Also, Corrigan discloses many different types of light valves that can be used (col. 7, lines 34-67; col. 8, lines 1-3). In addition, Corrigan disclose something similar to blending of the first and second light wavelengths based on the durations of the first and second light emission time periods. In the second alternative projector head, the combining optics sequentially combines the red, green, and blue laser illuminations from the first, second, and third micro-lens arrays to sequentially illuminate the first GLV 78. Thus, the second alternative projector head sequentially projects and scans the red, green, and blue linear arrays of pixels onto and across the display screen 56 to produce the color image 54 (col. 7, lines 38-45).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the GLVs of Corrigan with light valves of Matsui and switches of Reymond.

The suggestion/motivation for doing so would have been to provide a better display that produces brighter and more efficient images for displaying pictures. Furthermore, the GLV, produces a linear array of pixels which changes with time in response to a signal from the display electronics, each pixel configured in the reflecting mode or the diffracting mode at a given instant in time. Thus, the GLV produces sequential linear arrays of red, green, and blue pixels with each of the red, green, and blue pixels in the reflecting mode or the diffracting mode (col. 2, lines 16-23).

As pertaining to claims 2 and 20, Matsui discloses an apparatus, circuit, means,

images and data for a third set of LEDs 12B that generates a light having a different wavelength from the previous two sets of LEDs (col. 7, lines 33-44, Fig. 2) and a control circuit 35. Matsui also discloses the blending or combining of the different wavelengths during the durations of the different time periods (col. 17, lines 4-42). Again, Matsui does not disclose the shared power source but it would be obvious that one is included because the LEDs and other components need to be powered, third switch and third light transmission guide from the third set of LEDs to a third display device. Reymond discloses a third switch that can be connected to the third LED (col. 4, lines 51-55; col. 6, lines 1-32 and Figs. 4-5). However, Corrigan discloses a projection system that uses lasers and GLV to guide the light. See claim 1, for rejection. Claims 2 and 20 are dependent on claims 1 and 19, and are rejected on the same basis and what is stated above.

As pertaining to claims 3, Matsui discloses the first, second and thirds sets of LEDs emit red, green and blue, respectively (col. 7, lines 22-31). Claim 3 is dependent on claims 1-2 and is rejected on the same basis and what is stated above.

As pertaining to claims 5, Matsui discloses the first, second and thirds sets of LEDs are light emitting diodes (col. 7, lines 22-31). Claim 5 is dependent on claims 1-2 and is rejected on the same basis and what is stated above.

As pertaining to claim 6, Corrigan discloses the light sources are laser (col. 3, lines 46-48). It is well known in the art that lasers come from diodes to produce this type of light. Claim 6 is dependent on claims 1-2 and is rejected on the same basis and what is stated above.

As pertaining to claim 44, Corrigan discloses teaches the first light transmission guide comprises a first plurality of optical fibers 48 optically coupled with one or more of the LEDs from the first set of LEDs 58 and a light pipe integrator coupled with the first plurality of optical fibers 48, and the second light transmission guide comprises a second plurality of optical

fibers 50 optically coupled with one or more of the LEDs from the second set of LEDs 60 and a light pipe integrator coupled with the second plurality of optical fibers 50 and further the third light transmission guide comprises a third plurality of optical fibers 52 optically coupled with one or more of the LEDs from the third set of LEDs 62 and a light pipe integrator coupled with the third plurality of optical fibers 52 (fig. 2). Claim 44 is dependent on claims 1-2 and is rejected on the same basis and what is stated above.

As pertaining to claim 45, Matsui and Corrigan disclose a first display device to receive light from the first set of LEDs through the first transmission guide, a second display device to receive light from the second set of LEDs through the second transmission guide and a third display device to receive light from the third set of LEDs through the third transmission guide. See claims 1-2 for rejection regarding the transmission guide and display devices. Claim 45 is dependent on claims 1-2 and 44 and is rejected on the same basis and what is stated above.

As pertaining to claim 46, Matsui discloses the display device to comprise an LC type display (col. 7, lines 61-67; col. 8, lines 1-4). Claim 46 is dependent on claims 1-2 and 44-45 and is rejected on the same basis and what is stated above.

As pertaining to claim 47, Matsui discloses a prism 10 to receive light from the display devices (fig. 2). Also, Corrigan discloses an optical combiner 84 to receive light from the display devices (fig. 5). Claim 47 is dependent on claims 1-2 and 44-46 and is rejected on the same basis and what is stated above.

As pertaining to claim 48, Matsui discloses a projection lens 15 to project an image provided by the optical combiner or prism 10 (fig. 2). Also, Corrigan discloses a projection lens 88 to project an image provided by the optical combiner 84 (fig. 5). Claim 48 is dependent on claims 1-2 and 44-47 and is rejected on the same basis and what is stated above.

3. **Claims 4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui, Reymond and Corrigan as applied to claim 1 or 2 above, and further in view of Kanayama, US 4,897,639.

As pertaining to claims 4, Matsui, Reymond and Corrigan disclose that the LEDs emit red, green and blue.

As pertaining to claims 4, they do not disclose LEDs that emit yellow, cyan and magenta light.

Kanayama discloses three LEDs that emit yellow, cyan and magenta (col. 2, lines 50-68).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the LEDs of Kanayama with those of Matsui, Reymond and Corrigan.

The suggestion/motivation for doing so would have been to provide a display that uses LEDs that are able to provide different combination of colors for viewing purposes. Claim 4 is dependent on claims 1-2 and is rejected on the same basis and what is stated above.

4. **Claims 7-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui, Reymond and Corrigan as applied to claims 1 or 2 above, and further in view of Pross et al. (hereinafter "Pross"), US 6,396,466 B1.

As pertaining to claims 7, Matsui, Reymond and Corrigan disclose what has previously been stated above.

As pertaining to claims 7, they do not disclose wherein the display controller generates a compensating control signal on at least one of the first, second and third switches to compensate for a failed LED in the first, second and third sets of LEDs, respectively.

As pertaining to claims 7, Pross discloses a control circuit, which encompasses a logic circuit that generates a signal or compensation signal that is connected to a switch and power

source, in the event that entire display fails or if part of display can still function. The signal generated indicates a replacement is needed or compensation is possible (col. 3, lines 8-14; col. 4, lines 1-6).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the logic circuit of Pross with the control circuit of Matsui and Corrigan and the switches of Reymond.

The suggestion/motivation for doing so would have been to provide a display that can still function if an LED or LED set fails. In the event that a LED failed, then the switch would be able to stay open or closed, depending on the arrangement of the LEDs to allow the display to function. Thus the consumer would still have a functioning display, without having to worry to replace it. Claim 7 is dependent on claims 1-2 and is rejected on the same basis and what is stated above.

As pertaining to claim 8, Matsui discloses a switching means for switching the variable resistor or resistor for varying the voltage applied across the light emitting diodes 12R, 12G and 12B for independently adjusting the brightness of the light radiated form the light emitting diodes (col. 10, lines 23-29). Furthermore, Pross discloses the first, second, and third control signals further operate on a current level of a current source called controllable current sources to adjust the brightness of the light emitted by the first, second, and third sets of LEDs (col. 2, lines 54-55). Claim 8 is dependent on claims 1-2 and is rejected on the same basis and what is stated above.

As pertaining to claims 9, Pross discloses at least one of the first, second and third sets of LEDs further comprises of at least one set of series-parallel arrays of LEDs (col. 1, lines 3-5). Claim 9 is dependent on claims 1-2 and is rejected on the same basis and what is stated above.

5. **Claims 23-25, 27, 33-36 and 43** are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui in view of Corrigan and further in view of Hunter, US 5,724,062.

As pertaining to claim 23 and 34, Matsui discloses a picture display method and apparatus for displaying a picture by spatially modulating the light from a light source and projecting the modulated light (col. 1, lines 7-10). Matsui discloses circuit, means, images and data comprising two sets of LEDs or channels 12R and 12G, that generate light each having a different wavelength from each other (col. 7, lines 33-44, Fig. 2). Matsui further discloses a display controller 35 and picture signal processing circuit 31, in which it functions as described herein: the display controller drives the drive circuit for the respective colors 34R and 34G for driving the LEDs individually and the controller controls the picture signal processing circuit. A picture signal VS is entered to the circuit 31 when generates a picture signal for corresponding the each color that is stored in memory 32R and 32G, corresponding to each color. The light valve driving circuits 33R and 33G read out the respective color picture signals at a pre-set period from the picture memories 32R and 32G to drive the picture display light valves 11R and 11G, based on the read-out picture signals, respectively. The light-emitting diode driving circuits 34R and 34G drive the light-emitting diodes 12R and 12G for perpetually or suitably lighting the light-emitting diodes 12R and 12G,respectively (col. 10, lines (col. 9, lines 56-67; col. 10, lines 1-45; Fig. 2-3). Furthermore, Matsui discloses relay lenses 13R and 13G, field lenses 14R and 14G, first and second picture display light valves 11R and 11G and prism 10 for collecting all of the color picture signals (col. 2, lines 9-44; fig. 2). In addition, Matsui discloses in another embodiment, the controller 35 controls the light emitting diode driving the circuits 34R, 34G and 34B in a time relation to the display of the gradation pictures for red, green and blue colors in the picture display light valve, so that the light emitting diodes 12R, 12G and 12B will be turned on sequentially. The result is that the light emitting diodes are turned on in a

timed relation with the display (col. 17, lines 24-36). In addition, Matsui discloses something similar to blending of the first and second light wavelengths based on the durations of the first and second light emission time periods. Referring to the timing chart of FIGS. 17A-17D, the operation of the picture display device of the present embodiment is explained. The controller 35, fed with the picture signals VS, generates timing signals for splitting a frame period or a field period into three equal portions in timed relation to the picture signals and sends the generated timing signals to the picture signal processing circuit 66 and to the light valve driving circuit 68. The picture signal processing circuit 66 is responsive to these timing signals to generate red picture signals, green picture signals and the blue picture signals, and sequentially switches between these signals to output the selected signals. These picture signals are temporarily stored in the picture memory 67. The light valve driving circuit 68 is responsive to the timing signals from the controller 35 to sequentially read out the picture signals of the respective colors from the picture memory 67 to drive the picture display light valve 65. The result is that, in the picture display light valve 65, gradation pictures of red (R), green (G) and blue (B) are sequentially switched and displayed during a frame or field period, as shown in FIG. 17D. The controller 35 controls the light-emitting diode driving circuits 34R, 34G and 34B, in a time relation to the display of the gradation pictures for red, green and blue colors in the picture display light valve 65, so that the light-emitting diodes 12R, 12G and 12B will be turned on sequentially. The result is that the light-emitting diodes 12R, 12G and 12B (indicated as LED R, LED G and LED B in FIGS. 17A-17C) are turned on in a timed relation with the display of the gradation pictures for red, green and blue in the picture display light valve 65, so that the light beams of the respective colors are sequentially switched and illuminated on the picture display light valve 65. By the above operation, the red, green and blue pictures are sequentially

switched and projected on the screen 17. These pictures are perceived by the viewer as the color picture due to the afterimage effect of the human eye (col. 17, lines 4-42).

As pertaining to claim 23 and 34, Matsui does not disclose a) first and second color frame image data, even though he hints at it above and b) a method for propagating the light from the first and second sets of LEDs to a first and second display device.

As pertaining to claim 23 and 34, Hunter discloses a display system that uses LEDs as it light source (col. 3, lines 8-13). Furthermore, the method incorporated for addressing the LEDs is disclosed by the steps of lighting a set of one red, one green and one blue light emitting diode in the set for a predetermined time period and shuttering the set of light emitting diodes with a liquid crystal pixel for at least a portion of the predetermined time period to thereby emit light from the shuttered pixel for selected time period (col. 3, lines 28-36).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the method of address the LEDs of Hunter with the method of Matsui.

The suggestion/motivation for doing so would have been to provide a better display that has high resolution, high brightness, and full color and to further provide persistence when changes in color perceived by the human eye (col. 3, lines 8-36).

As pertaining to claim 23 and 34, Corrigan discloses an invention related to image projectors, which a laser illuminated modulator produces an array of pixels and in which the array of pixels is projected on a display screen (col. 1, lines 7-11). Furthermore, Corrigan discloses a grating light valves (GLV), 78, 80 and 82. The GLVs are used for guiding the light, i.e. light transmission guides, for modulating the red, green and blue laser illuminations to produce red, green and blue linear arrays of pixels (col. 4, lines 1-5, fig. 5). Also, Corrigan discloses many different types of light valves that can be used (col. 7, lines 34-67; col. 8, lines

1-3). In addition, Corrigan disclose something similar to blending of the first and second light wavelengths based on the durations of the first and second light emission time periods. In the second alternative projector head, the combining optics sequentially combines the red, green, and blue laser illuminations from the first, second, and third micro-lens arrays to sequentially illuminate the first GLV 78. Thus, the second alternative projector head sequentially projects and scans the red, green, and blue linear arrays of pixels onto and across the display screen 56 to produce the color image 54 (col. 7, lines 38-45).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the GLVs of Corrigan with light valves of Matsui and frame duration of Hunter.

The suggestion/motivation for doing so would have been to provide a better display that produces brighter and more efficient images for displaying pictures. Furthermore, the GLV, produces a linear array of pixels which changes with time in response to a signal from the display electronics, each pixel configured in the reflecting mode or the diffracting mode at a given instant in time. Thus, the GLV produces sequential linear arrays of red, green, and blue pixels with each of the red, green, and blue pixels in the reflecting mode or the diffracting mode (col. 2, lines 16-23).

As pertaining to claims 24 and 35, the same rejection can be made above but with regards to the third light frame, light source control signal, the blending of the light wavelengths based on durations of the time periods and propagation of light, see claim 23 and 34 for rejection. Claims 24 and 35 are dependent on claims 23 and 34, respectively and are rejected on the same basis and what is stated above.

As pertaining to claims 25 and 36, Matsui discloses the first, second and thirds sets of LEDs emit red, green and blue, respectively (col. 7, lines 22-31). Furthermore, Hunter discloses

the LEDs emit red, green and blue, respectively (Fig. 1). Claims 25 and 36 are dependent on claims 23-24 and 34-35, respectively and are rejected on the same basis and what is stated above.

As pertaining to claim 27, it would be obvious that Matsui controller 35 operates from a power source so as to control the drive circuits etc. Claim 27 is dependent on claims 23-24 and is rejected on the same basis and what is stated above.

As pertaining to claims 33 and 43, Matsui discloses the display device to comprise an LC type display (col. 7, lines 61-67; col. 8, lines 1-4). Claims 33 and 43 are dependent on claims 23-24 and 34-35 and are rejected on the same basis and what is stated above.

6. **Claims 26 and 37** are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui, Hunter and Corrigan as applied to claim 23 or 24 or 34 or 35 above, and further in view of Kanayama, US 4,897,639.

As pertaining to claims 26 and 37, Matsui, Hunter and Corrigan disclose that the LEDs emit red, green and blue.

As pertaining to claims 26 and 37, they do not disclose LEDs that emit yellow, cyan and magenta light.

Kanayama discloses three LEDs that emit yellow, cyan and magenta (col. 2, lines 50-68).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the LEDs of Kanayama with those of Matsui, Hunter and Corrigan.

The suggestion/motivation for doing so would have been to provide a display that uses LEDs that are able to provide different combination of colors for viewing purposes. Claims 26 and 37 are dependent on claims 23-24 and 34-35 and are rejected on the same basis and what is stated above.

7. **Claim 28** is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui, Hunter and Corrigan as applied to claim 23 or 24 above, and further in view of Reymond, US 5,936,599.

As pertaining to claim 28, Matsui, Hunter and Corrigan disclose what has previously been stated above.

As pertaining to claim 28, they do not disclose a first, second and third switches coupled between the display controller and the first, second and third sets of LEDs or color channels, respectively, wherein the display controller generates a compensating control signal on at least one of the first, second and third switches to compensate for a failed LED in the first, second and third sets of LEDs, respectively.

Reymond discloses a circuit that comprises one embodiment an AC power source 34 a switch 36 that is connected in series with an LED array 31 and in a second embodiment, same thing as described in the first embodiment, but with capacitor C in parallel with the array LED array, in this combination further comprising an inductor with the help the capacitor C provides an high impedance current source (col. 4, lines 51-55; col. 6, lines 1-32 and Figs. 4-5). It is also known that the switch may be of several different types, whether it is switching circuit or any type of transistor, i.e. MOSFET, BJT etc.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine a switch of Reymond with each set of LED's of Matsui, Hunter and Corrigan.

The suggestion/motivation for doing so would have been to provide a better LED circuit that is able to operate with the help of a switch the controlling circuit would function at more efficient rate. When the switch is closed it would allow the circuit to function properly but when open it would allow the LEDs to rest in a sense or to allow the circuit not to consume power thus

saving power. Also the switch would help if there was a problem with that particular LED array because it would stay open, hopefully, thus allowing the circuit to operate the other LED array without using or consuming power to operate the nonfunctioning LED array. Claim 28 is dependent on claims 23-24 and is rejected on the same basis and what is stated above.

8. **Claims 29-31, and 38-42** are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui, Hunter and Corrigan as applied to claims 23 or 24 above, and further in view of Pross et al. (hereinafter "Pross"), US 6,396,466 B1

As pertaining to claims 29-30 and 40-41, Matsui and Hunter disclose that the LEDs are light emitting diodes (M: col. 7, lines 22-31; H: col. 3, lines 8-13) and Hunter and Corrigan disclose the light sources (H: col. 4, lines 38-43; C: col. 3, lines 46-48) can be laser. It is well known in the art that lasers are generated by diodes.

As pertaining to claims 29-30 and 40-41, they do not disclose the LEDs, whether light emitting or laser, are of series parallel array.

As pertaining to claims 29-30 and 40-41, Pross discloses at least one of the first, second and third sets of LEDs further comprises of at least one set of series-parallel arrays of LEDs (col. 1, lines 3-5).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the series parallel arrays method of Pross with light emitting and laser diodes of Matsui, Hunter and Corrigan.

The suggestion/motivation for doing so would have been to provide a display that uses series parallel laser diodes instead of light emitting diodes. The main reason for having a series parallel array is that they are more efficient because if one series parallel fails, it will not shut down or make the entire display inoperable because only the section will not work thus allowing

the other sections to still function. Claims 29-30 and 40-41 are dependent on claims 23-24 and 34-35 and are rejected on the same basis and what is stated above.

As pertaining to claim 31, Pross discloses a control circuit, which encompasses a logic circuit that generates a signal or compensation signal that is connected to a switch and power source, in the event that entire display fails or if part of display can still function. The signal generated indicates a replacement is needed or compensation is possible (col. 3, lines 8-14; col. 4, lines 1-6). Claim 31 is dependent on claims 23-24 and 27 and is rejected on the same basis and what is stated above.

As pertaining to claim 38, Pross discloses a control circuit, includes a power source and multiple controllable current sources that are connected to each set of LEDs (col. 2, lines 50-55 and Fig. 4). Claim 38 is dependent on claims 34-35 and is rejected on the same basis and what is stated above.

As pertaining to claim 39, Matsui discloses a switching means for switching the variable resistor or resistor for varying the voltage applied across the light emitting diodes 12R, 12G and 12B for independently adjusting the brightness of the light radiated form the light emitting diodes (col. 10, lines 23-29). Furthermore, Pross discloses the first, second, and third control signals further operate on a current level of a current source called controllable current sources to adjust the brightness of the light emitted by the first, second, and third sets of LEDs (col. 2, lines 54-55). Claim 39 is dependent on claims 34-35 and 38 and rejected on the same basis and what is stated above.

As pertaining to claim 42, Pross discloses a control circuit, which encompasses a logic circuit that generates a signal or compensation signal that is connected to a switch and power source, in the event that entire display fails or if part of display can still function. The signal generated indicates a replacement is needed or compensation is possible (col. 3, lines 8-14;

col. 4, lines 1-6). It would be obvious that the control circuit can be connected to the current sources instead of the switch which would allow in the event if a current source failed or LED's failed the compensating signal would either turn that current source off or turn off the set of LED's. Claim 42 is dependent on claims 34-35 and 38 and is rejected on the same basis and what is stated above.

9. **Claim 32** is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui, Hunter, Corrigan and Reymond as applied to claims 23 or 24 or 28 above, and further in view of Pross.

As pertaining to claim 32, Matsui, Hunter, Corrigan and Reymond disclose what has previously been stated above related to this claim.

As pertaining to claim 32, they do not disclose a compensating control signal to operate on at least the first, second and third switches to compensate for a failed LED.

As pertaining to claim 32, Pross discloses a control circuit, which encompasses a logic circuit that generates a signal or compensation signal that is connected to a switch and power source, in the event that entire display fails or if part of display can still function. The signal generated indicates a replacement is needed or compensation is possible (col. 3, lines 8-14; col. 4, lines 1-6).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the control circuit that generates a compensation signal of Pross with the control circuit of Matsui, Hunter and Corrigan and the switches of Reymond.

The suggestion/motivation for doing so would have been to provide for a better display that is able to still function if an LED or LED set fails because of the compensation signal. In the event that a LED failed, then the switch would be able to stay open or closed, depending on the arrangement of the LEDs to allow the display to function due to the compensating signal. Thus the consumer would still have a functioning display, without having to worry to replace it. Claim

32 is dependent on claims 23-24 and 28 and is rejected on the same basis and what is stated above.

Response to Arguments

10. Applicant's arguments filed 7/22/04 have been fully considered but they are not persuasive.

In responsive to the rejection of **Claims 1-2, 19-20, 23-24 and 34-35**, under 35 U.S.C. 112, first paragraph, applicant relies on pages 10-12 of the application to provide support for the rejected elements. Applicant also asserts that pages 10-12 describes how different colored light can blended based on the emission time periods by adjusting the time periods. However, there is not where found on pages 10-12 of the application that describes or suggest "... **by adjusting durations of the first emission time period and the second emission time period**", or "... **by adjusting the durations of the first emission time period, the second emission time period and the third emission time period**".

Applicant argues that the examiner has relied on the allegation that prior art merely show something similar the claimed elements, and therefore the rejection should be withdrawn. Applicant argues that things that are "similar" are still different. However, applicant did not pointed out what the difference is, whereas the rejections specifically pointed how each claimed element is meant by each reference. Since applicant did not point out what the difference is, it is believed the rejections are proper.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis-Doon Chow whose telephone number is 703-305-4398. The examiner can normally be reached on 8:30-6:00, Alternate Monday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Saras can be reached on 703-305-9720. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

D. Chow
November 12, 2004

DENNIS-DOON CHOW
PRIMARY EXAMINER